



CASE SERIES OF REHABILITATION OF PATIENTS HAVING MAXILLA-FACIAL DEFECTS WITH VARIOUS TYPE OF EXTRA- ORAL PROSTHESIS

¹Dr. Rimmy Takvani* and ²Dr. Aakash Takvani

¹B.D.S. M.D.S., Senior Lecturer, Government Dental College and Hospital, Jamnagar,
Gujarat, India.

²B.D.S. M.D.S., Private Practitioner, Jamnagar, Gujarat.

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*Corresponding Author

Dr. Rimmy Takvani

B.D.S. M.D.S., Senior
lecturer, Government
Dental College and
Hospital, Jamnagar,
Gujarat, India.

ABSTRACT

Face forms an integral part of our body, the patients presenting with maxillofacial defect present with great challenges in term of social acceptability to the world. These defects may arise due to congenital or acquired reasons, but they leave a painful site in terms of social acceptability to these patients. Rehabilitation of these defects either surgically or prosthetically, reduces these issues and at the same time,

it helps the patient live a near-normal life. This article describes about prosthetic rehabilitation of such cases with facial defects along with discussing the scope of maxillofacial prosthodontics. The cases discussed in this article include case planning and materials used in fabrication of ocular prosthesis, ear prosthesis and lip prosthesis.

KEYWORDS: Maxillofacial Prosthesis, Lip Prosthesis, Silicon ear Prosthesis, Artificial Replacement.

INTRODUCTION

Man's need for artificial replacements to supply missing or lost body parts has probably existed as long as man himself.

Maxillofacial prosthesis is defined as any prosthesis used to replace part or all of any stomatognathic and/or craniofacial structures.^[1]

The attempts started as early as 16th century with usage of materials like gold, silver, paper and liner cloth glued together. Ambroise Pare, a French surgeon, was the first to fabricate a nasal prosthesis followed by Pierre Fauchard who attempted to fabricate lost part of mandible for a French soldier.^[2]

Multiple attempts were then made to make such prosthesis more life-like, i.e. materials replacing the hard tissue were made stiffer and tougher and those replacing the skin and soft tissues were made resilient, soft and stainable to mimic the color of skin. The materials replacing the skin include silicon elastomers- most widely used, polyphosphazines and other polymers.^[3]

The etiology for missing structures may be surgical, congenital or traumatic which include accidental trauma, burn injuries, post- cancer resection etc.^[4] Multiple syndromes are also associated with missing facial tissues.

CASE SERIES

Extra- Oral Maxillofacial Prosthesis includes the following types of prosthesis depending on the parts being replaced.

1. Occular Prosthesis- replaces the eye.
2. Orbital Prosthesis- replaces eye along with surrounding skin and soft tissues.
3. Nasal Prosthesis- replaces nasal septum, bridge and surrounding soft tissues.
4. Auricular Prosthesis- replaces ear along with helix and tragus.
5. Facial prosthesis- replaces lost skin of the face.
6. Finger Prosthesis- replaces missing fingers

This article briefs about the above-mentioned prosthesis with the help of clinical case reports.

1. Occular Prosthesis: The goal of any prosthetic treatment is to return the patient to society with a normal appearance. The surgical procedure in removal of an eye may be either-

- a. **Evisceration-** Removal of the contents of the globe, but leaving the sclera
- b. **Enucleation-** Removal of the eyeball itself.

Both the procedure necessitate replacement to restore facial esthetics, preserve muscular tonus and protect socket against injuries.^[5,6] An occular prosthesis is that maxillofacial prosthesis which replaces the content of the globe and such a prosthesis may be used as a

conformer which adapts well to the ocular muscles and thus, mimics the movement of adjacent natural eye. A treated case of missing eye after enucleation of contents of left eye with an ocular prosthesis fabricated by the author for a 46 year old male (Figure 1a and 1b). The materials used in the construction are heat-cure polymethyl metha-acrylate and oil based paints for characterization of the iris.

Such a prosthesis restores the lost confidence and the patient reported more positive attitude in his social behavior.

2. Orbital Prosthesis: An orbital prosthesis is that type of maxillofacial prosthesis that replaces missing contents of the orbit i.e. contents of the globe with the surrounding skin. Such a defect is followed by the procedure called Exenteration i.e. removal of the entire contents of the orbit, including the extraocular muscles. The ideal defect is circumscribed fully by bony orbital rim. The eyebrow should be intact. An orbital prosthesis can also get retention from implants and magnets.^[7]

3. Auricular Prosthesis: Large auricular defects resulting from skin cancer surgery present reconstructive challenges. Smaller defects may be repaired by primary closure, wedge repair, skin grafts, advancement or transposition flaps, or the chondrocutaneous helical rim advancement flap.^[8]

An auricular prosthesis is the one that replaces missing structures of external ear and surrounding skin. The defect necessitating replacement may arise due to congenital anomalies, trauma, surgical excision or accidents or burns. Multiple syndromes are associated with microtia (small ear) and anotia (missing ear). The material used in fabricating ear prosthesis is Medical-grade room temperature vulcanisation silicone which is available in transparent color, shade- match and mixing is done chair-side for this material in front of the patient to obtain nearest shade match to the patient's skin tone (Figure 2).

The case presented is of an eighteen year old female patient who lost her ear because of burn injury (Figure 3a). Skin had lost its laxity because of presence of scar tissue post- burn injury. Partial ear prosthesis was constructed for the patient and the match was kept closer to the burnt skin than the normal skin (Figure 3b).

- 4. Lip or skin Prosthesis:** This is the type of maxillofacial prosthesis replaces the missing parts of the facial structure. The technique followed for construction of wax prototype may be classified as under:
- a. Sculpting: The wax prototype replacing the skin is carved and sculpted on stone- replica of the patient by the clinician.
 - b. Donor- method: impression is made of a person displaying similar anatomical features, and is used to fabricate the wax- prototype.

The material and method used are same as ear prosthesis i.e. medical grade room-temperature vulcanisation poly-silicone.

The case report presented is of a 52 year old male patient who underwent commando operation for cancer surgery. The patient has missing mandible involving symphysis, parasymphysis, body, ramus, coronoid and condylar process on the right side as a result of resection during oncosurgery.

The patient had severe social withdrawal due to the presence of disfigurement. The patient used to wear a mask to cover the defect. The patient was rehabilitated with a skin prosthesis replacing chin, lip and part of skin using silicon elastomer and characterized using silicon stains. A denture was fabricated taking the support from the teeth on unaffected side, which helped to give support to the prosthesis (Figure 4a and 4b).

After the treatment, the patient reported significant changes in his social behaviour in terms of confidence and reported to not have used mask since then.

- 5. Nasal Prosthesis:** This is the type of maxillofacial prosthesis which replaces missing parts of the nose. Like all other prosthesis replacing skin, this prosthesis is also fabricated using room temperature vulcanisation silicone. Room temperature vulcanisation silicone is the material of choice which is stainable, flexible, with good tear resistance and thus, it mimics skin tissue well.
- 6. Finger Prosthesis:** This type of prosthesis replaces missing phalanges in the finger. The combination of material one which mimics rigidity of bone and resiliency of skin is used for fabricating such a type of prosthesis. The part of the prosthesis mimicking the bone is fabricated with Polymethyl metha-acrylate which is lined with room temperature

vulcanised silicone elastomer characterized with stains. Such a prosthesis is retained either with the help of adhesive, or metallic rings.

Alternatively, the missing phalanges can be retained with the help of implant placed in hand.^[9]

Figures



Figure 1 (a): Defect in left eye of the patient.



Figure 1(b): Customized ocular prosthesis placed in the eye socket



Figure 2: Implants may be used to support orbital prosthesis.



Figure 3(a): partial loss of right ear after burn injury.



Figure 3(b): Rehabilitation with silicon ear prosthesis mimicking the burnt skin.



Figure 4 (a): Picture showing the defect with denture in place



Figure 4(b): Patient rehabilitated with silicon lip and chin prosthesis.

CONCLUSION

The science of maxillofacial prosthetics has advanced a lot over the years. Missing body parts have known to cause psychological stress in patients.^[10] The treatment of choice for such patients is reconstructive surgery. In cases where reconstructive surgery is not possible due to either large size of the defect, contra-indication to surgery or any other reason, replacement of missing tissues with prosthesis should be considered. It is difficult to mimic nature in all forms but an attempt can be made by characterization of such prosthesis to the closest possible match. Prosthesis can be fabricated in a manner which mimic the natural tissues of the body and help such patients live a normal life. Such a kind of prosthesis alleviates psychological distress in the patient and allows inculcation of positive social behaviour in these patients with such defects and disfigurement.

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